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especially as involving
the Tonsils.

BY ✓

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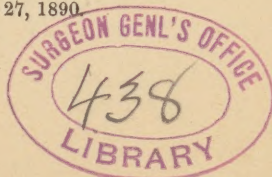
BY WILLIAM HENRY THAYER, M. D.

WITHIN a very few years different observers have noted the occurrence of rheumatic inflammation in tissues and organs not previously recognized as liable to its invasion.

If we examine all the authorities earlier than 1850, we shall find that acute rheumatism is supposed to affect only the fibrous tissues about the articulations, the voluntary muscles, and the heart, especially its lining and investing membranes.

A little later, some few have recognized its implication of the lungs as a rheumatic bronchitis or pneumonia, its character being revealed by being preceded or followed by articular rheumatism, and yielding to remedies suitable to that disease. Thus Fuller (1852) says that during his service in St. George's Hospital some pulmonary inflammation (bronchitis, pneumonia, or pleurisy) was observed in one in every eighteen cases of acute rheumatism, uncomplicated with recent cardiac mischief. Trousseau in his *Clinical Medicine* says: "There is rheumatic pneumonia," and no-

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where alludes to inflammation of the tonsils. He says, however (vol. i, p. 331): "There is another kind of painful sore throat—the rheumatic sore throat," which he describes as general redness of the pharynx with œdematous uvula, disappearing entirely in a day or two, with metastasis to the articulations. Flint (1879) says: "Bronchitis, pleurisy, and pneumonia are rarely associated with rheumatism." In his *Diseases of the Pharynx* he makes no allusion to any rheumatic inflammation. Garrod (1880) describes rheumatic inflammation of the heart, pleura, and peritonæum, but not of the throat. Watson (1840) and Bennett (1860) make no mention of any pulmonary complication of rheumatism.

The relation of amygdalitis to rheumatism in any case has never been noticed until within a very recent period; no text-book on practice twenty years old has any mention of it. Senator, in von Ziemssen's *Cyclopædia* (1877), says: "Inflammation of various mucous surfaces is by no means unusual. Foremost among these is bronchitis, then pharyngitis, noticed by Lebert and Meyer." Rheumatic inflammation of the tonsils, such as I shall presently describe as occurring in a number of cases under my observation in the winter of 1888-'89, is either a new manifestation or—which is hard to believe—has entirely escaped notice hitherto. The only experience that has been published is that of Dr. C. W. Haig-Brown, who, in the *British Medical Journal* for September 14, 1889, has a valuable paper entitled Follicular Tonsillitis and its Relations to Rheumatism, in which he relates the frequency of amygdalitis and of rheumatism in a public institution, due, as he thought, to sewer exhalations. Improvement of the sewerage reduced the cases of amygdalitis from twenty-one per cent. of all the sick to five per cent., and rheumatism from four to one per cent. He gives a considerable experience of the sequence of one disease to the other, or their concur-

rence. He says: "Having so far established a causative and clinical relationship between rheumatism and amygdalitis, we are led to one of certain conclusions: That rheumatism is a general disease, which as frequently finds expression in the throat as in the fibrous and serous membranes; or that the inflamed tonsil is the receptacle for the rheumatic poison, and the medium for its conduction to the general circulation; or, finally, that specific germs find their way into the body under circumstances favorable to their entry, and then evidence their presence in inflammation of the tonsils and the fibrous and fibro-serous membranes."

Garrod says (1880): "The pathology of articular rheumatism must be allowed to be in a very unsettled state, and further observations and experiments are required before we can arrive at any satisfactory conclusion with regard to it. . . . The name implies that the disease has been considered to be dependent upon some altered condition of the blood." This altered condition was believed to be the presence of lactic acid in the blood, the result of imperfect digestion—a belief that originated with Prout. "But," says Garrod, "no abnormal principle has yet been found in the blood; lactic acid has been assumed to exist in it, but no proof has been given of its presence."

The adoption of Prout's view led to the treatment with alkalis, which was eminently successful and considerably shortened the attacks; and it is noticeable that under this treatment the urine after a few days became alkaline, and simultaneously with this change in the urine convalescence began. Acidity somewhere is apparently an element in the pathology of rheumatism, although no acid is found in the blood.

And, says Fuller (1852): "When the rheumatic poison is present in the system, any disturbing circumstance, even of temporary duration, such as over-fatigue, anxiety, grief,

or anger, by rendering the system more susceptible of its influence, may prove the accidental or exciting cause of the disease; and exposure to cold or to atmospheric vicissitudes is almost certain to induce an attack. . . . Thus it appears that cold and other external agencies are only predisposing or exciting causes of rheumatism, and that the primary, proximate, or essential cause of the disease is the presence of a morbid matter in the blood, generated in the system as the product of a peculiar malassimilation—of vicious metamorphic action.” But what this morbid product is, is thus far only matter of conjecture; neither chemist nor microscopist has been able to discover it.

In the winter of 1888-’89 I saw six cases of rheumatic amygdalitis, some of which are offered in detail:

CASE I.—Wilber T., aged twelve, previously well, had an attack of follicular amygdalitis in December, 1888, and on January 14, 1889. On the 24th of January a third attack, with subacute rheumatism, which lasted only four days.

February 10th.—Cough, without physical signs. Pain and tenderness in right groin and along right iliacus internus muscle, and in front of left ear; and on the 12th in the left ankle. Temperature, 100.5° F.; pulse, 102. The dry cough continued till February 17th, the pains having nearly abated, but on the 22d there was still some stiffness of left wrist.

He was then out and going to school until May 23d, when he had an acute amygdalitis, the tonsils being so much swollen as nearly to close the isthmus faucium, with fever. He got an active cathartic, and the next day the tonsils were nearly normal and fever gone. He continued well after this until February 3, 1890, when he had an acute inflammation of the tonsils, with rheumatism, from all of which he recovered in six days.

February 16, 1890.—In bed with subacute rheumatism in toes, ankles, and right hip, which disappeared in two days.

March 12th.—Subacute rheumatism since 9th, now chiefly in left wrist. Slight icterus. Was given dilute nitrohydrochloric acid and strychnine.

14th.—Some pain in cardiac region. Pulse 60, somewhat unequal, with a slight thrill in radial artery.

April 12th.—No pain and no thrill in pulse since March 16th. Out daily and feels well.

Was treated with salicylate of sodium during the several attacks, followed by tincture of chloride of iron and dilute phosphoric acid after convalescence. But the latest attack was treated by nitrohydrochloric acid and strychnine, in addition to the salicylate.

Thus in five consecutive months he had five attacks, and, after nine months' freedom from illness, three more attacks, in the course of two months, of amygdalitis or rheumatism, or both combined. In the intervals he was out and generally at school. Since the latest attack in March he has been well; has been on a plainer diet than usual, with care to avoid anything likely to produce indigestion.

CASE II.—A. W. A., commercial traveler, aged forty, married. Has had an attack of alcoholism about every two years; one in October and November, 1888, for which he had been under treatment. Then went to Indiana, whence he returned December 4th with acute rheumatism of arms and neck, amygdalitis and gonorrhœa, dating from December 1st.

December 5th.—In bed. Pulse, 84. Tongue thickly coated. Redness and swelling of tonsils and pharynx, without exudation. Deglutition painful. Neck and shoulders painful and immovable.

7th.—Right knee invaded; neck same. Tonsils pale and less swollen.

In a day or two began to have headache, at first every other afternoon, with fever and delirium. The pain was in the right frontal region. By January 1, 1889, it continued daily, and there was spasm of the left arm and leg when he attempted to rise. The fever recurred every afternoon, and the pain was then most severe. His morning temperature was normal. His knee continued inflamed, but there was no rheumatism elsewhere. The record of January 23d is: "10 A. M., daily head-

ache, generally in the afternoon, with much fever, followed by sweating. Spasm of left side once every day when attempting to sit up, but less severe than it has been. Temperature, 98.4°."

There was gradual improvement from this time until February 1st, when, after the excitement attending an interview about business, he had headache and delirium all day, and in the evening was violent and noisy, until quieted by a hypodermic injection of morphine and atropine. Next morning his pulse was 68; temperature, 98°. The sulphate of quinine, which he had taken since January 23d, was increased January 30th to twenty grains every morning, and ten grains, if fever, every evening. He had no fever or headache after February 2d, and steadily gained strength and flesh. His lame knee was the only remnant of rheumatism, which was gradually relieved under the application of compound tincture of iodine. The quinine was steadily reduced, so that on the 8th of February he was taking six grains a day. On the 9th he was dressed, and began to go to business March 6th. The gonorrhœa never received attention and disappeared in a few days.

The treatment was first with salicylate of sodium, for which acetate of potash was substituted December 9th, and sulphate of morphine and atropine given at night. Quinine was begun December 24th—six grains daily. On January 1st, iodide of potassium was given in place of the acetate, and continued till January 23d, when it was omitted, and quinine increased to eighteen grains daily, and bromide of potassium was given with every dose. On the 30th, the quinine was increased to thirty grains a day, but reduced after February 2d on the disappearance of the fever.

CASE III.—F. B., a girl, seventeen years old, who, March 23, 1889, had an acute catarrh, with cough.

March 27th.—Follicular amygdalitis.

April 5th.—Cough nearly gone. Large swelling, with tenderness of left submaxillary gland, which subsided in a few days.

23d.—Amygdalitis. Rheumatism in shoulders and insteps. Got salicylate of sodium.

28th.—Rheumatism has gone from joint to joint, with little swelling. Now in left wrist only. It soon entirely disappeared.

CASE IV.—Miss E. B., aged thirty.

February 13, 1889.—Painful deglutition last two days. Moderate follicular amygdalitis.

14th.—Pain in left arm and in one spot in abdomen.

26th.—Catarrhal laryngitis for two days; still has pain in neck, left chest, and leg.

March 1st.—Cough less. Pain in neck and right side of head.

4th.—Hoarseness and cough much less. Never any expectoration. Pulse, 66; small. No impulse of heart felt. Rhythm normal, except that the first sound is duplicated. Pain at times under right knee; none elsewhere.

6th.—Pain in both ankles and right elbow. Got out about March 12th, and lameness of joints gradually disappeared.

CASE V. June 3, 1889.—Grace W., aged sixteen. In bed with acute articular rheumatism, involving now left knee and ankle and lumbar region. Has had this for several days, following quinsy with purulent discharge. Reports that she had quinsy in 1886 and 1888, the second attack being followed by articular rheumatism, continuing nine weeks.

5th.—Right hand swollen and very painful; no rheumatism elsewhere, except at times pain in the left chest, with dyspnœa. Pulse regular. Impulse of heart normal.

7th.—After visit on 5th, the left hand became inflamed. Yesterday both hands were well. Last night and now, some pain in chest, due to indigestion. Relieved by a mustard emetic, and had no return of rheumatism.

CASE VI.—Mrs. C., aged thirty.

February 3, 1889.—Follicular amygdalitis, with subacute rheumatism.

CASE VII is of especial interest, as an instance of rheumatism involving a derangement of the lymphatics. E. K., a generally healthy boy, twelve years of age, began late in November, 1889, to have occasional pain in the left side of the abdomen, over a limited region, without fever or other symptom. Then headache for several days. But by December 4th his pains were gone and he went to school.

December 12th.—Pain in the right side of abdomen between the crest of the ilium and the ribs when he moves, and somewhat aggravated by pressure. None on the left side, none in head, some pain in left tonsil. Is generally well.

16th.—Slight pain on both sides of abdomen. The left submaxillary lymphatic gland has been swollen and tender for the last two days.

He had slight fever December 21st and 22d. Temperature, 100·8°. From that time through January he had daily moderate headache from rising until noon, and every day slight pain in abdomen, but he was not far from well in general, did not lose flesh, and went to school daily.

January 25th.—Pulse, 84, regular. Temperature, 98·8°. Slight pain on both sides of abdomen and lower right chest, without tenderness. Bowels moving daily. Swelling of lymphatic submaxillary gland nearly gone. From this time he was taken out of school, but was out of doors daily. He continued to have slight pains a part of every day—sometimes on one side, sometimes on the other of abdomen and chest; but by the middle of March they were much less frequent. He had a good appetite and slept well.

March 21st.—Yesterday began to have some sore throat, but so slight that he did not speak of it. Was feverish and restless all night. This morning great swelling of the left (salivary) submaxillary and sublingual glands and surrounding tissues above and below lower jaw, so that he can only separate jaws half an inch. Face flushed. Swallowing painful. Pulse, 120.

5 P. M.—Opened mouth with difficulty widely enough to show swelling of entire soft palate and tongue; not very red.

22d.—Raises some mucus, streaked with blood. Pulse, 114, less full.

5 P. M.—Pulse, 100. Temperature in axilla, 100·8°. Some headache.

He improved rapidly, but on March 30th was still somewhat restricted in opening his mouth, by the relics of the cellulitis around the muscles of the jaw. He had no abdominal pain during this attack, and has had none anywhere since his recovery, eight weeks before the date of the present report. About

the first of May he had an indigestion, entirely relieved by a mustard emetic.

Seen May 7th. Feels very well. Left lymphatic submaxillary gland still visible and palpable, but not tender.

His treatment was first with a cathartic, then salol for a fortnight. Then iron, quinine, and phosphoric acid. The attack of cellulitis was treated with a cathartic dose of calomel, aconite during the continuance of the fever, with a mouth-wash of carbolic-acid solution, and soap liniment and aconite liniment to the cheek, with whisky after the first day. And when convalescence was fairly established he was put upon dilute nitrohydrochloric acid after meals, which was continued four weeks.

May 22d.—Two months from the attack of cellulitis. During this interval he has been entirely free from pain or other symptom, except the attack of indigestion mentioned at the beginning of the month. To-day there is slight swelling and tenderness of the left parotid gland, with some pain in chewing. Throat normal. No pain in swallowing. Tongue clean. No fever.

Directed decolorized tincture of iodine to the surface three times a day, and an aloetic laxative.

23d.—Swelling less; hardly any tenderness. No pain in chewing. Reports slight pain on right side in swallowing. Tonsils nearly normal size. Tongue clean. Temperature, 98·8°. Pulse has a slight thrill; impulse of heart strong, regular. Feels well. Goes out.

Solution of carbolic acid and glycerin for gargle.

25th.—No pain in swallowing. Parotid swelling has nearly disappeared, but there is a slight swelling and tenderness of integuments around zygomatic arch.

Resume dilute nitrohydrochloric acid.

There has been through this case evidence of the endocardium sharing in the rheumatic affection, indicated by a somewhat rasping systolic sound and a thrill in the radial pulse at the time of the acute attacks. He had never previously to this illness had any cardiac affection.

Some of the cases just related may be a desirable contribution to the study of the physiology of the tonsils which has enlisted the attention of various physicians within the last few years. Without venturing to express any opinion upon the subject, I offer them as possibly available items of evidence when the physiological inquiry is in progress. It was begun, I believe, by Dr. R. Hingston Fox, and has been pursued by Dr. S. Spicer and several others, but never experimentally. Dr. Fox says of the functions of the tonsils in health (*Lancet*, 1888): "These organs consist of a mass of closed sacs or nodules, identical in structure with those of the solitary and Peyer's glands, and, indeed, of the ordinary lymphatic glands of the body. Some small mucous glands open into the crypts on the surface, but these are quite insignificant. . . . Their functions must be of the absorbent kind. . . . In health, food matter, perhaps a ferment, would be absorbed from the saliva, and stimulate the tonsils to healthy activity. In disease a poison, perhaps also a ferment, is absorbed from the saliva and overstimulates the tonsil; there is overactivity, multiplication of ill-formed cells, and other phenomena of inflammation."

Dr. Spicer (*Lancet*, 1888), quoting Dr. Fox, says the tonsils are absorbents of the excess of buccal secretions and liquids from the food, and form part of the blood-manufacturing system—"nurseries for young leucocytes, planted by the waterside, and drawing their sustenance from the nutrient stream. . . . The anatomical facts on which these views are based are the following: The tonsils are like sponges in texture, consistence, and structure, being riddled with lacunæ or crypts. In the intervals of deglutition these spongy organs lie in the glosso-epiglottic fossæ, soaking in the buccal secretions, which fill up all their pores. Further, the tonsils are constructed on the type of a mucous membrane, corrugated so as to expose a large sur-

face, and on these corrugations are thickly studded lymph follicles, as well as in these organs a very rich plexus of lymphatic vessels, which must have some function; and what more probable than the relation suggested, of which we have so much confirmatory evidence. Also these follicle aggregations are situated at places just below the output of the buccal secretions, and in the course which these must take."

It will be observed that the views just quoted of the physiology of the tonsils are purely theoretical. They are plausible theories, but careful experiments which have been made lately do not confirm them. Dr. Eugene Hodenpyl, of Brooklyn, has been devoting much time and care to experiments upon living animals and microscopic examination of the faucial tonsils, with results not yet published, but which he has kindly permitted me to use. Some of his conclusions from an exhaustive study of the tonsils are as follows: "None of the theories thus far advanced to explain the functions of the tonsils are conclusive. The tonsils are not absorbing organs. They neither absorb fluids nor solid particles from the mouth, under ordinary conditions, nor do they take up foreign materials from the tissues in their immediate neighborhood."

The question as to the office of the tonsils in health, and what relation they bear to the general physical organization in the diseases in which they suffer, may be considered to be still open for investigation and discussion.



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